

AF 3611 \$

TRANSMITTAL OF APPEAL BRIEF (Large Entity)

Docket No.  
AKI-C052

In Re Application Of: MIYAJIMA et al



Serial No.  
09/763,092

Filing Date  
2/16/01

Examiner  
D. Depumpo

Group Art Unit  
3611

Invention: SWING ARM FOR TWO-WHEELED MOTOR VEHICLE AND METHOD OF PRODUCING THE SAME

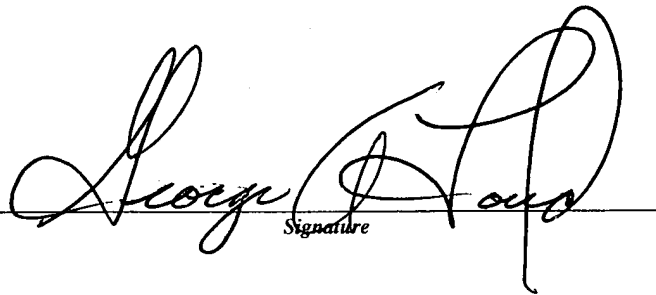
TO THE COMMISSIONER FOR PATENTS:

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Dated: 30 July 2003

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19/Appeal Brief  
J. P. Miller  
8/7/03

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of )  
)  
Iwao MIYAJIMA ) Examiner: Depumpo, Daniel  
)  
Serial No.: 09/763,092 ) Group Art Unit: 3611  
)  
Filed: February 16, 2001 )  
)  
For: SWING ARM FOR TWO-WHEELED )  
MOTOR VEHICLE AND METHOD OF )  
PRODUCING THE SAME )

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APPEAL BRIEF

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This appeal is from the examiner's final rejection dated December 3, 2002.

I. Real Party of Interest

The real party of interest in the captioned application is TS Tech Co., Ltd., as evidenced by an assignment recorded at reel 11614, frames 0835-0837 in the U.S. Patent and Trademark Office.

II. Related Appeals and Interferences

To the best knowledge of the undersigned, there is no other appeal or interference which will directly affect or be directly affected by or have a bearing on the Board's decision in this pending appeal.

### III. Status of the Claims

All pending claims, i.e., claims 13-17 and 28, are finally rejected. Accordingly, the appealed claims are claims 13-17 and 28 and a true copy thereof is attached hereto.

### IV. Status of Amendments

A "Revised Response to Final Action Under 37 CFR 1.116" was filed April 1, 2003 and has been entered. See the examiner's Advisory Action dated April 15, 2003.

### V. Summary of the Invention

As explained in applicants' specification under the heading "Technical Background", beginning at page 1 of the "Substitute Specification", the present invention is directed to a specific problem associated with a specific element of a two-wheel motor vehicle. In particular, the present invention is directed to a problem with the "swing arm" of a motorcycle shown as element 103 in Fig. 22 of applicants' drawings. The specific problem associated with the swing arm, to which the present invention is directed, is generation of noise by resonance with the motor. As noted at page 2, lines 8-11 of applicants' Substitute Specification, in a motorcycle the swing arm is attached in close proximity to the engine and therefore resonates with same. Japanese Utility Model Publication No. 01-106,390, of record, establishes that a "swing arm" serves as a wheel suspension member and, as such, should be distinguished from the "main body frame" to which the teachings of Yamagiwa et al (the primary reference in the prior art rejections) are directed.

Applicants' solution to the foregoing problem is to provide a foam resin within the swing arm to absorb vibration and prevent resonance (page 4, lines 1 to 4 of applicants' Substitute Specification). As described at page 5, lines 4-9 of applicants' Substitute Specification, the raw material of the foam resin is first introduced into the swing arm followed by the "step of foaming the introduced raw material." The pending claims are limited to the preferred embodiments using a urethane foam which, as taught at page 10, lines 13-18 is preferred for its heat resistance, oil resistance and cost. "Further, urethane foam is easily adhered to aluminum and has excellent mechanical properties for absorbing vibrations" (page 10, lines 14 and 15). Claims 13-17 here further define the urethane foam as having a density of from 0.01 to 0.1 g/cm<sup>3</sup> which density makes it "possible to effectively control the resonance due to the engine vibrations," quoting from the last two lines at page 4 of the substitute specification. Claim 28 describes a preferred embodiment of the present invention wherein urethane resin and gum-based particles are admixed to form a raw material and that raw material is filled into hollow portions of the swing arm and then foamed. As described at page 11, lines 1-4 of applicants' Substitute Specification, such a raw material containing urethane and gum-based particles is preferably foamed to a density of 0.05 to 0.5, as further recited by claim 28.

## VI. Issues

The following issues are presented for consideration here on this appeal.

1. Are the claims presented on appeal properly rejected under the first paragraph of 35 USC 112 because the units for the density ranges recited therein are not disclosed in applicants'

specification?

2. Was claim 24 (replaced by claim 28) properly rejected for indefiniteness (35 USC 112, second paragraph)?

3. Has the examiner established a *prima facie* case of obviousness with respect to the subject matter of claim 28?

4. Is the invention as defined by claims 13-17 *prima facie* obvious within the meaning of 35 USC 103?

5. If claim 13 is deemed *prima facie* obvious over the cited prior art do claims 14-17 satisfy the patentability requirement of 35 USC 103?

#### VII. Grouping of the Claims

In the context of the rejection under 35 USC 112, first paragraph, it is believed that all pending claims stand or fall together. However, both in the context of the rejection for indefiniteness and in connection with an issue of obviousness, claim 28 must be considered separate and apart from claims 13-17. Further, if claim 13 is deemed *prima facie* obvious, the patentability of claims 14-17 under 35 USC 103 should be separately considered.

#### VIII. Argument

##### A. Applicants' Specification Inherently Describes the Units for Density Because Those Skilled in the Art Would Recognize the Units on the Basis of the Disclosed Ranges of Density for a Polyurethane Foam

In applicants' "Supplemental Response" filed August 13, 2002, attorney for applicants argued:

It is respectfully submitted that those skilled in the art would recognize that applicants' teachings of density are in such units because the density of resin foams is conventionally, in modern practice, given in units of "g/cm<sup>3</sup>".

Abstracts of four Japanese Kokai publications were submitted as representative of the conventional usage of density values expressed in terms of "g/cm<sup>3</sup>" with the response of August 13, 2002.

In the examiner's subsequent final action of December 3, 2002, the examiner did not controvert applicants' assertion that density of resin foams is conventionally expressed in "g/cm<sup>3</sup>" and did not advance any alternative theory as to what units might be understood by those skilled in the art from a reading of applicants' specification.

It is further submitted, that to the extent the other art of record is relevant to the issue, it supports applicants' contention that those skilled in the art would understand the units for the density ranges taught by applicants' specification to be expressed in terms of g/cm<sup>3</sup>. U.S. 4,134,610, U.S. 4,659,618 and U.S. 6,296,299 are noted as references of record teaching densities for polyurethane foams. The most recent of these references, i.e., U.S. 6,296,299 expresses density in terms of "g/cm<sup>3</sup>". See Table 1 at column 10 of U.S. 6,296,299. U.S. 4,659,618 also expresses density of a urethane foam in terms of "g/cm<sup>3</sup>" (0.05 g/cm<sup>3</sup> - column 6, line 29). U.S. 4,134,610 discloses a polyurethane foam used in an automobile bumper "having a density within the range of from about 50 to about 150 g/dm<sup>3</sup>, preferably from about 70 to about 120 g/dm<sup>3</sup>....," quoting from column 3, lines 22-24. Thus, while U.S. 4,134,610 expresses density of a polyurethane foam in different units (g/dm<sup>3</sup>) it does so with absolute values many orders of magnitude higher than those recited by

applicants' claims which would lead those skilled in the art to the logical conclusion that applicants' range of density values is not expressed as  $\text{g/dm}^3$ .

U.S. 4,978,562 teaches, quoting the title, "Composite Tubular Door Beam Reinforced With a Syntactic Foam Core..." The density of the core, without specification of the material, is given as "from about 15 pounds per cubic feet to about 50 pounds per cubic feet...", quoting from column 7, lines 5-7. Again, the values for density are magnitudes higher than those of the ranges recited by applicants' claims. Finally, U.S. 5,128,196 teaches a density for polystyrene foam of 3.4 pounds/cubic feet, again many orders of magnitude higher than applicants' value for density.

Where the disclosure inherently teaches a claimed feature, that feature is "described" within the meaning of the description requirement of the first paragraph of 35 USC 112. *Kennecot Corp. v. Kyocera International, Inc.*, 5 USPQ2d 1194 at 1197 (Fed. Cir. 1987). The issue is whether or not the specification as originally filed "conveyed in any way to those skilled in the art, to whom it is addressed, the information that appellants invented the... [claimed subject matter]." *In re Smythe*, 178 USPQ 279 at 284 (CCPA 1973). It is respectfully submitted that the four Kokai publications submitted with applicants' paper filed August 13, 2002 and which teach density given in units of " $\text{g/cm}^3$ ", as well as the other documents of record here, the only evidence of record bearing on this issue, support applicants' position that the test of *Smythe* is met, i.e., that the original specification conveyed a teaching of density understood by those skilled in the art to be expressed in terms of  $\text{g/cm}^3$ .

B. The Rejection of Claim 24 for Indefiniteness is Moot

Claim 24 was rewritten as independent claim 28 by applicants' response filed April 1, 2003. Although the subsequent Advisory Action of April 15, 2003 does not so indicate, it is believed that the rejection for indefiniteness is moot with respect to claim 28. Note that claim 28 states "the urethane foam is formed having a density of 0.050 g/cm<sup>3</sup> to 0.500 g/cm<sup>3</sup>" and thus clearly states that it is the foam product, not the raw material, which has a density within the recited range.

C. The Record Does Not Establish *Prima Facie* Obviousness of the Subject Matter of Claim 28

Claim 28 recites, in relevant portion, "wherein the raw material of the urethane foam is mixed with gum-based particles." Claim 28 further recites that the mixture of urethane foam precursor and gum particles is filled into hollow portions of the swing arm and is then foamed. The patentability of claim 24 over the prior art, and later that of claim 28, has been repeatedly argued, but the record here does not reveal how or why claim 28 should be considered unpatentable for obviousness within the meaning of 35 USC 103. The final rejection of December 3, 2002 reveals only that claim 24 is rejected for obviousness over a combination of Yamagiwa et al '777, Japanese '390 and Lindewall.

The burden of presenting a *prima facie* case of unpatentability resides with the PTO. *In re Piasecki*, 223 USPQ 785, at 788 (Fed. Cir. 1984) and *In re Thorpe*, 227 USPQ 964 at 966 (Fed. Cir. 1985). Here the examiner has not established a *prima facie* case for obviousness of the subject matter of claim 28.



While Japanese '390 suggests the separate use of "gum" and polyurethane foam (not a precursor thereof) as a filling material for a swing arm, no reference of record suggests use of gum particles in a mixture with a polyurethane foam, much less the claimed method which requires the mixing of the gum particles with the polyurethane foam raw material, followed by filling the hollow portions with the urethane raw material/gum and then foaming.

D. The Subject Matter of Claims 13-17 and 28 is Not *Prima Facie* Obvious Over the Reference Combination (Paragraph 7 of the Final Action)

1. No Reference of Record Suggests the Filling of a Swing Arm with a Polyurethane Foam Raw Material and Then Foaming

The examiner's primary reference, U.S. 5,375,677 issued to Yamagiwa et al, leads to filling a foam polyurethane resin 110 into only "main body frames 18L and 18R". For example, at column 20, lines 27-30 the reference teaches:

It is to be noted that, in the present embodiment, taking economy into consideration, the foamed polyurethane resin 110 is filled only in the chambers at the rear half portions of the main body frames 18L and 18R. [Emphasis added]

Note that "rear fork 98" of Yamagiwa et al is a "swing arm" and constitutes what the art regards as the "rear wheel suspension system," not part of the "main body frames" which is the subject of the invention of Yamagiwa et al, as attested to by the English language abstract for Japanese Utility Model Publication No. 01-016390, of record.

While Japanese Utility Model Publication No. 01-016390 relates to a swing arm, the various "vibration suppressing materials" are stuffed into the hollow of the swing arm, as distinguished from the present invention wherein the foam raw material is introduced and then foamed.

The other secondary reference of record, U.S. 4,134,610 issued to Lindewall, relates to an automobile bumper which is intended to absorb impact. It is submitted that the teachings of Lindewall suggest nothing relevant to the filling of a swing arm of a two-wheel vehicle for the purpose of vibration suppression or for any other purpose. The swing arm of a two-wheel vehicle is not intended to serve, and indeed does not serve, as an impact receiving member equivalent to a bumper.

2. The Teachings of Yamagiwa et al and Those of Lindewall are Not *Prima Facie* Combinable

As revealed in the final action the examiner relies upon the teachings of Lindewall for a disclosure of a polyurethane foam having a density falling within the claimed ranges. However, as noted above, Lindewall is directed to structure unrelated to any of the structure disclose by Yamagiwa et al and in particular unrelated to the rear fork 98 of Yamagiwa et al. Further, Lindewall is directed to impact resistance which is unrelated to the problem to which Yamagiwa et al is directed, i.e., vibration suppression.

Also note that in Lindewall a preformed polyurethane foam is attached as a bumper to a frame by a screw which threads into a perforated aluminum sheet. Thus Lindewall is unrelated to the filling of a structural member such as a swing arm with a polyurethane raw material which is subsequently foamed and subsequent foaming of same in place.

### 3. Claims 14-17 Further Distinguish the Present Invention from the Reference Combination

The main body frame portions 18L and 18R which are filled with foam in accordance with the teachings of Yamagiwa et al have neither a threaded opening which would permit the introduction of the raw material (claims 14 and 16) nor an opening at a free distal end which would permit introduction of the raw material (claims 15 and 17). At column 20, lines 45-59 Yamagiwa et al teach that the “main body frames 18L and 18R” include a plurality of openings 42 and 80 “which originate from core prints for supporting thereon cores for forming the inner chambers of the main body frames 18L and 18R.” According to Yamagiwa et al the openings 42 and 48, together with “inner windows 32,” are “convenient” and eliminate the need for “separately forming openings by machining for pouring raw foaming resin liquid therethrough.”

### E. Claims 16 and 17 are Not *Prima Facie* Obvious Over the Prior Art (see Paragraph 8 of the Final Action)

The rejection of claims 16 and 17 for obviousness in view of Japanese ‘390, Japanese ‘119, Yamagiwa et al and Lindewall is respectfully traversed for the reason that claims 16 and 17 depend, respectively, from claims 14 and 15 which are believed to be patentable for the reasons given above in section D.3 and further for the reason that they further depend from claim 13 which is considered patentable over the prior art for the reasons given in sections D.1 and D.2.

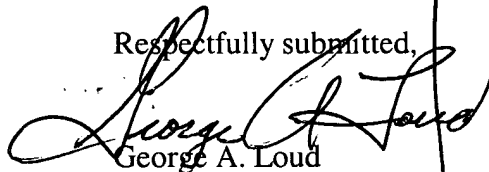
### IX. Conclusion

For the foregoing reasons, applicants’ disclosure is sufficient to convey to those skilled in the art the units for the claimed density ranges and thereby satisfies the written description

requirement of 35 USC 112. Further, the rejection of claim 24 for indefiniteness, as it might apply to claim 28, is believed to be moot for the reason given above in section VIII.B.

Finally, the rejections for obviousness are erroneous because based upon references which are not *prima facie* combinable and, even if combined, would not have led one skilled in the art to the invention as defined by claims 13, the claims dependent upon claim 13 or claim 28. For these reasons, the rejections set forth in the final action should be reversed.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "George A. Loud", is written over the typed name.

George A. Loud  
Reg. No. 25,814

Dated: July 30, 2003

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## APPENDIX

13. A method for producing a swing arm for a two-wheeled motor vehicle having an arm portion and a body portion, both of which have a hollow portion, the hollow portion being at least partly filled with a foam resin, said method comprising:

filling at least a part of said hollow portions with a raw material for forming a urethane foam;

and

foaming said raw material of urethane foam to form, within at least the partially filled hollow portion, the urethane foam having a density of  $0.010 \text{ g/cm}^3$  to  $0.100 \text{ g/cm}^3$ .

14. The method for producing a swing arm for a two-wheeled motor vehicle as defined in claim 13, wherein said raw material of the urethane foam is introduced at a threaded opening by which said swing arm is mounted to said two-wheeled motor vehicle.

15. The method for producing a swing arm for a two-wheeled motor vehicle as defined in claim 13, wherein said raw material of the urethane foam is introduced at an opening provided in a free distal end of said arm portion.

16. The method for producing a swing arm for a two-wheeled motor vehicle as defined in claim 14, wherein the openings, other than the opening at which said raw material of the urethane foam is introduced, are closed by means of a mesh sheet.

17. The method for producing a swing arm for a two-wheeled motor vehicle as defined in claim 15, wherein the openings, other than the opening provided at the end of the arm portion to introduce the raw material of the urethane foam, are closed by means of a mesh sheet.

28. A method for producing a swing arm for a two-wheeled motor vehicle having an arm portion and a body portion, both of which have a hollow portion, the hollow portion being at least partly filled with a foam resin, said method comprising:

filling at least a part of said hollow portions with a raw material for forming a urethane foam;

and

foaming said raw material of urethane foam to form the urethane foam and at least partially fill the hollow portion with the urethane foam;

wherein the raw material of the urethane foam is mixed with gum-based particles and the urethane foam is formed having a density of  $0.050 \text{ g/cm}^3$  to  $0.500 \text{ g/cm}^3$  from the raw material of the urethane foam having gum-based particles.